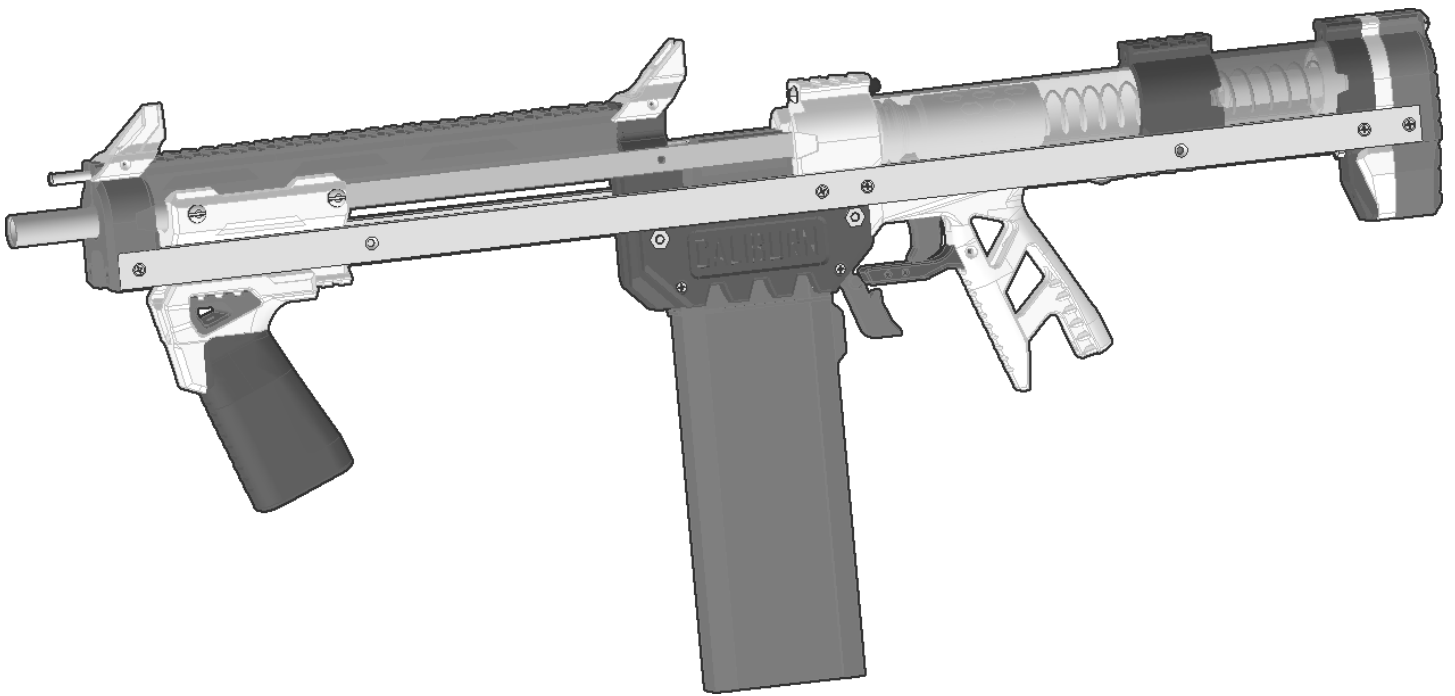


CALIBURN U ASSEMBLY INSTRUCTIONS

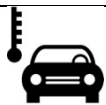


The Caliburn U is a Mag-Fed Pump-Action Homemade Nerf Blaster design released as a CC-NC license file set by Captain Slug (<http://www.captainslug.com>).

You are welcome to and encouraged to modify the files in any way you want. The Majority of the parts can be printed with infill as low as 20% in PLA, but I would recommend printing in layers of 300 Micron or smaller. I would recommend a minimum of 1.5mm walls/perimeters for every part.

Hardware kits and Full Blasters are available for sale as made-to-order items. I'm producing these myself in what remains of my free time.

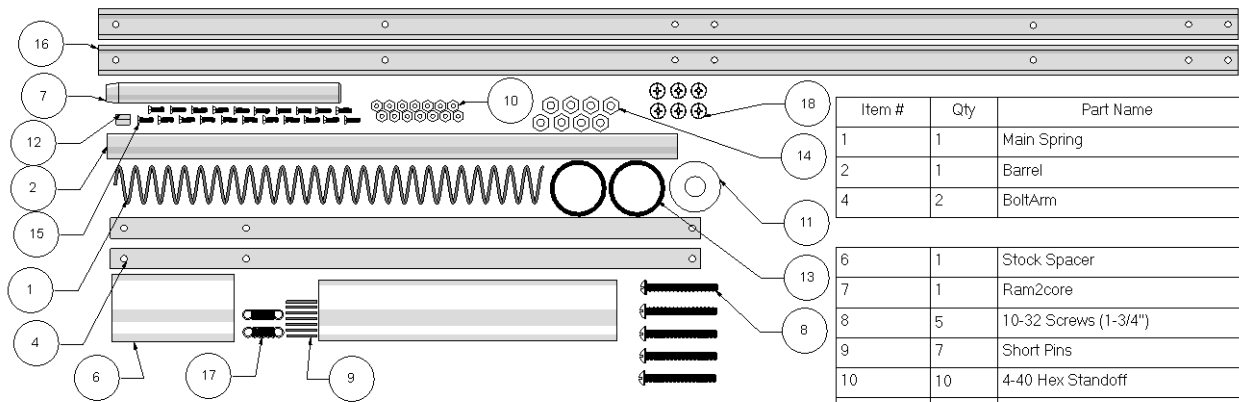
<https://www.etsy.com/shop/CaptainSlug>



DO NOT STORE IN TEMPERATURES ABOVE 100F. Storing the blaster inside of a car in warmer months will cause the printed parts to distort or warp beyond their intended shape. If you have to store one in a vehicle, store it in the trunk.



DO NOT use this blaster for indoor wars or wars involving very short distances. The muzzle velocities this design can reach are between 150fps and 210fps depending upon the darts used and the spring installed. If indoor use is intended, obtain the lower fps springs that are currently available for this design (K31 and 788) and use them.



Item #	Qty	Part Name
1	1	Main Spring
2	1	Barrel
4	2	BoltArm

6	1	Stock Spacer
7	1	Ram2core
8	5	10-32 Screws (1-3/4")
9	7	Short Pins
10	10	4-40 Hex Standoff
11	1	ShockPad
12	1	4-40 Standoff (11/32")
13	2	Dash 123 O-Rings
14	8	10-32 Hex Nuts
15	21	4-40 Screws (3/8" flat)
16	2	UChannel
17	2	Extension Springs
18	6	10-32 Screws (5/16")

Caliburn U Hardware Kit

12/21/19

Printed Parts NOT included.

Tools needed: Philips Screwdriver, 3/8 Combination Wrench, Round Needle File

For most of the above hardware list the quantities are the MINIMUM required for assembly. Easily-lost items will have several spares and I typically include extras of the majority of the items.

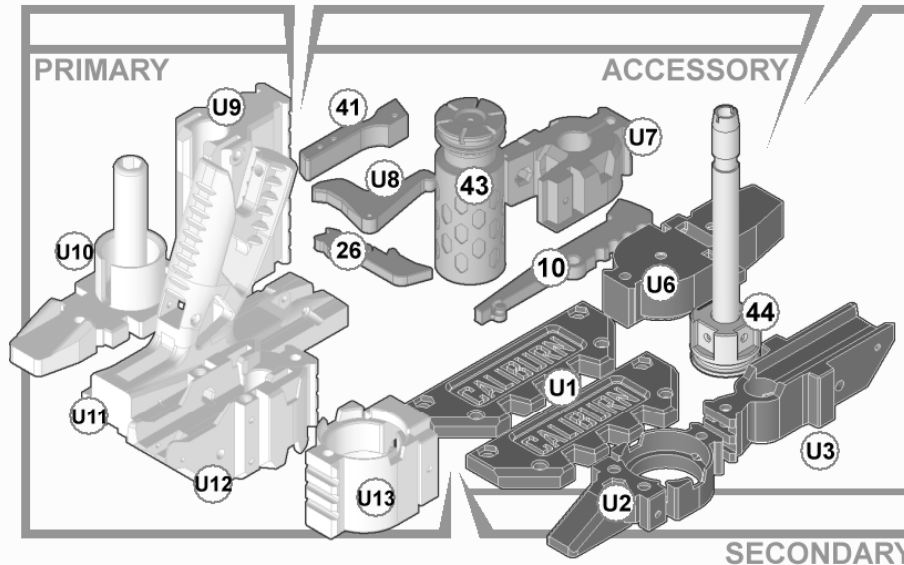
To assemble this blaster you will need a Slotted Screwdriver, Small Philips Screwdriver, 3/8 Combination Wrench, and a Round Needle File. You may also need a 3/8" socket and a square drive extension to use with it.

The Plunger Tube in the Hardware Kit does come pre-lubricated. But it's also a good idea to have extra lubricant on-hand for the Plunger Tube and I would recommend only using a clear Silicone Grease such as Oatey's brand #30219. Any clear 90% silicone grease will work fine so long as it does not include any additives. NEVER USE SILICONE LUBRICANT FROM AN AEROSOL CAN. The propellants used in those are harmful to plastic parts.

ALSO AVOID DRY-FIRING THIS BLASTER EXCESSIVELY. Firing without a dart in the barrel will add unneeded wear on this blaster, especially if the higher load rating springs are installed. Also do not pull the trigger with the foregrip in the rearward position (with the breech open). The breech being slammed closed by the main spring is very likely to damage both the breech itself and the magwell.

CALIBURN U Printed Part Set

03/07/20



Item #	Quantity	Part Name
U1	2	NamePlate
10	1	Sear
U2	1	FrontButt
26	1	MagRelease3
U3	1	MagFront
41	1	Tguard

U6	1	Buttplate
U7	1	Muzzle
43	1	PlungerE
44	1	Ram2
U8	1	Trigger
U9	1	DoomS
U10	1	BackButt
U11	1	Grip5ar
U12	1	MagFront
U13	1	Coupler

OPTIONS

	Railgasm	RMAX
AFG	Pyrrangle	AyyFG
	Upgraded Ram	
	SCAR	VF1
	Iron Sights	

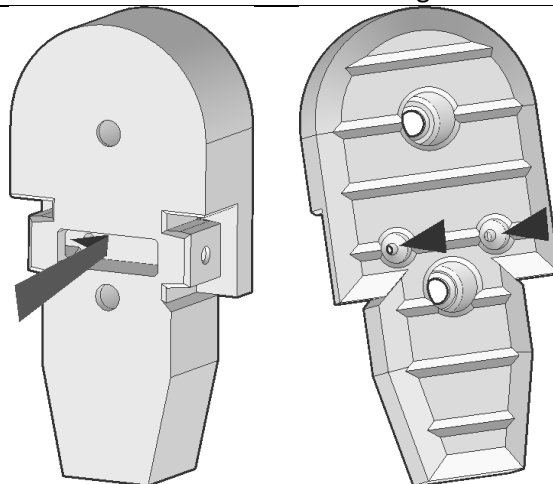
Note: Print layers should not be any larger than 300 microns. Parts were designed for PLA filament, but can be printed using ABS without issue. No support material is needed. Most of the parts should print to tolerance on their hole diameters, but results may vary so expect to have to touch up some of them with a round needle file

- Captain Slug

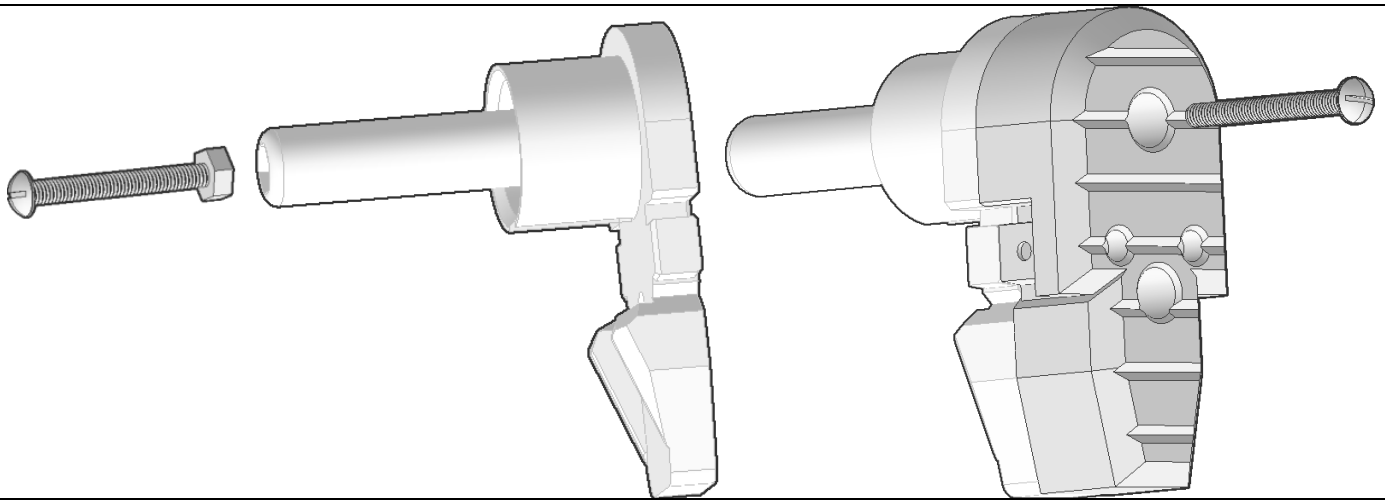
Assembly Instructions:

<http://www.captainslug.com/nerf/CaliburnUAssembly1.pdf>

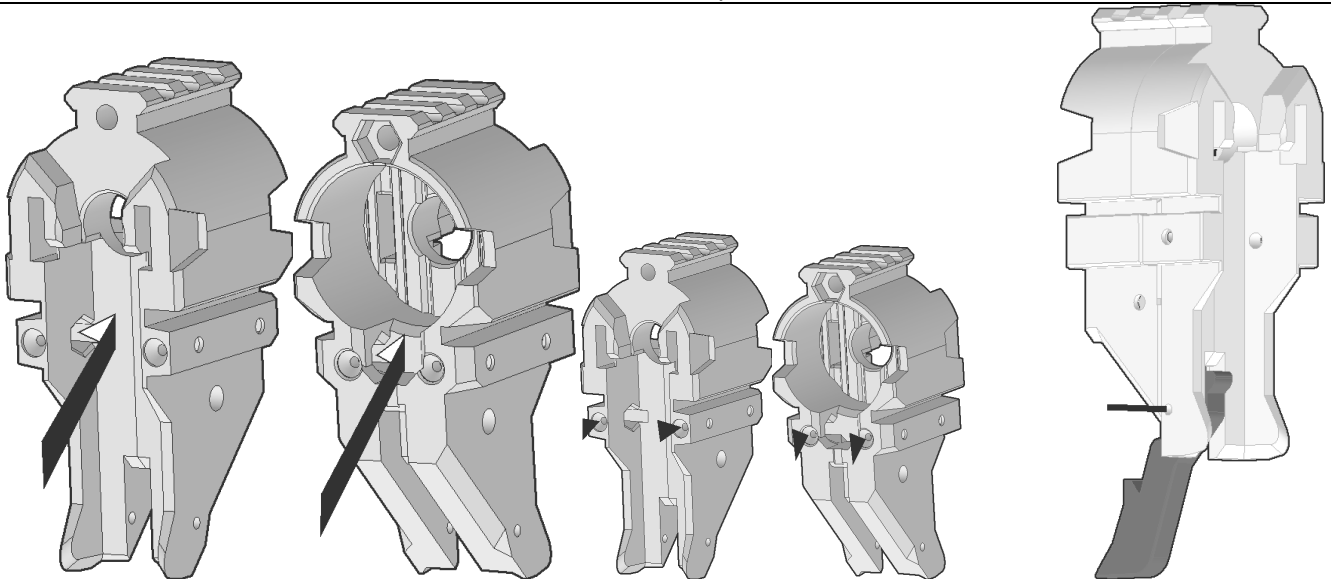
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



Use a slotted screwdriver to insert a 4-40 hex standoffs in through the middle of the Buttplate print until it bottoms out in the socket. Repeat on the opposite side. Drive some 4-40 screws into the holes perpendicular to the standoffs to retain them.

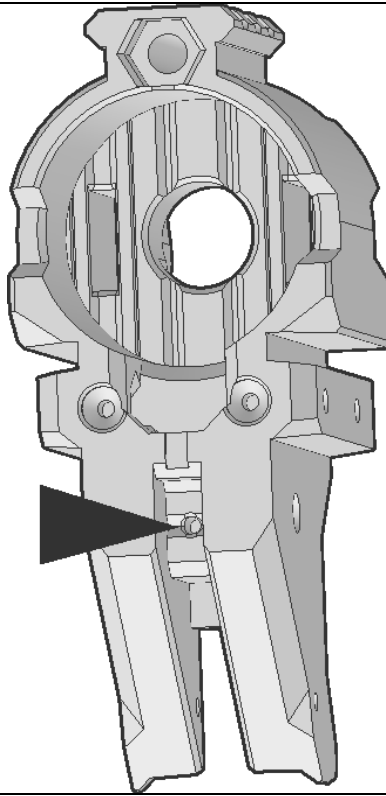


Place a 10-32 hex nut onto the end of a 1-3/4" length screw, then push the hex nut into the front of the spring guide of BackButt until it bottoms out. Unscrew the long screw from the hex nut.
 Insert the long screw in from the back of the Buttplate and the pin through the BackButt and screw it into the hex nut until tight.
 Set this assembly aside.

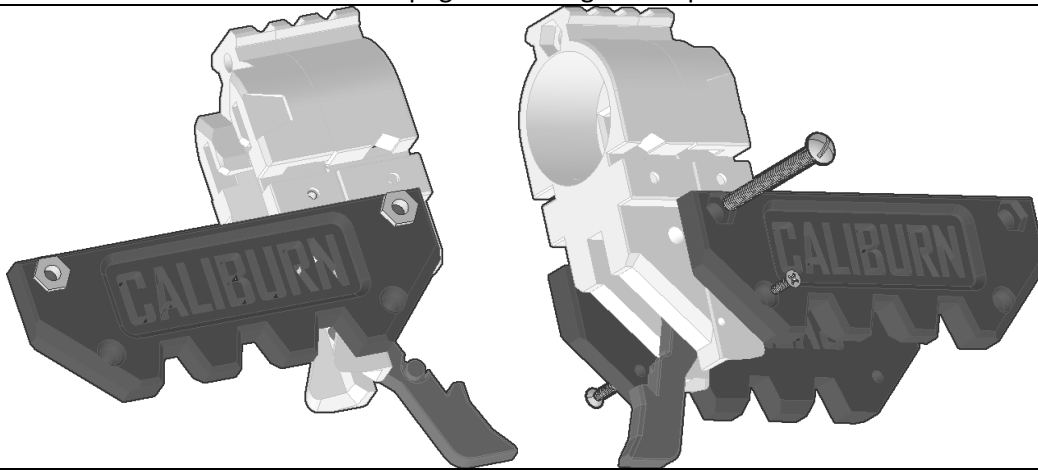


Force a hex standoff into each of the four sockets in the MagBack print. Drive a 4-40 screw into each hole indicated until they bottom out.

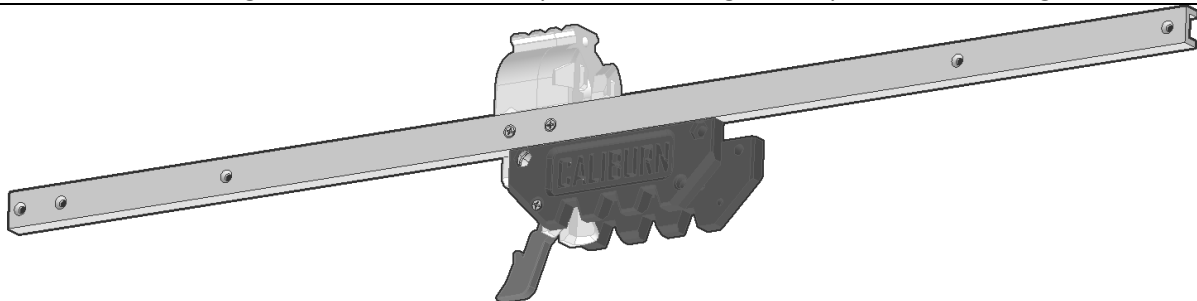
Line of the hole in the MagRelease print with the holes in the MagBack print and force a short pin through both parts.



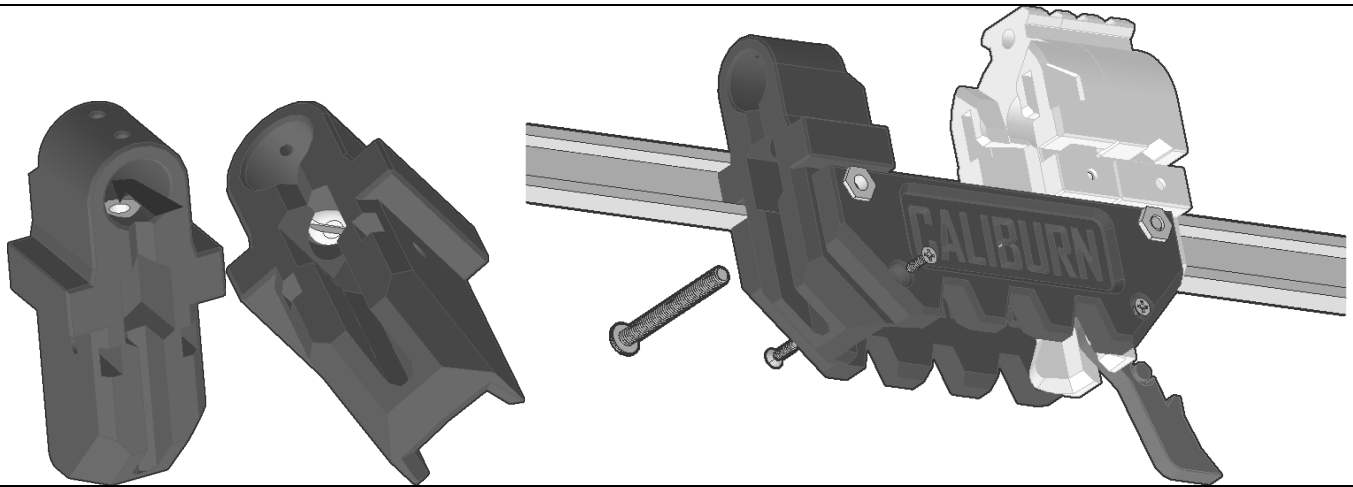
Drive a 4-40 screw into this hole to create a peg for the mag release spring. Hook one end onto the screw, and the other onto the peg on the magrelease print.



Insert a hex nut into each of the sockets in one of the nameplate prints using a hammer.
Line up both NamePlate prints with the hole in the side of the Magback print and secure it with a long 10-32 screw.
Drive 4-40 screws in through the lower holes to help retain the magrelease pin. Do not overtighten these screws.



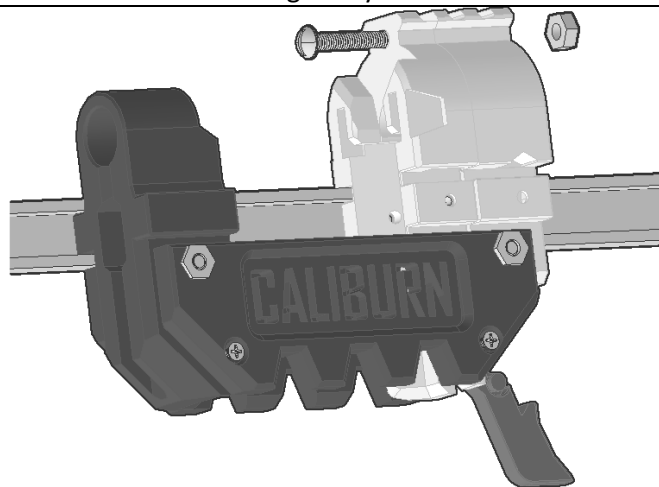
Push one of the U-channels onto the side of the resulting assembly with the two closely-spaced holes towards the rear, and the two further spaced holes towards the front as shown. Line up the hole indicated with the hole in the MagBack print and secure it with a pair of 4-40 screws. If the u-channel doesn't want to be pushed into place you may need to loosen the long 10-32 screw and lower 4-40 screws. Tap it into place with a hammer, then retighten those screws.



Use a screwdriver or the outside of a 3/8" socket to force a 10-32 hex nut into the hex socket inside the barrel hole in the MagFront print.

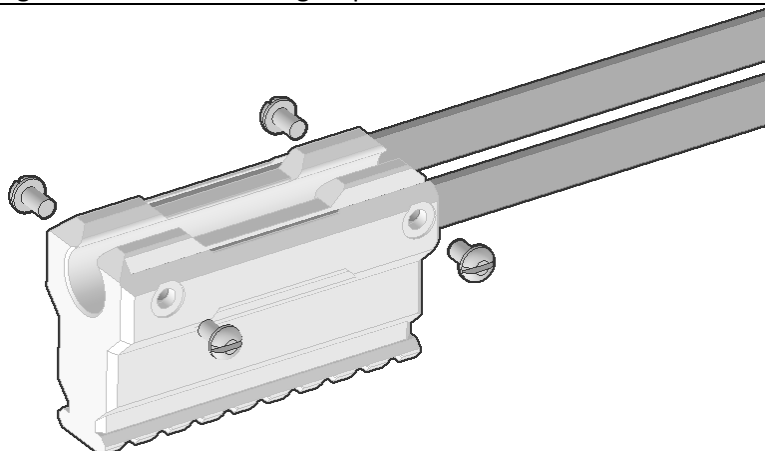
Drive a short 10-32 screw into that hex nut from underneath using a flat screwdriver. Only screw it in until the tip of the screw is flush with the opposite face of the hex nut.

Line the holes in both nameplates up with the holes in the sides of magfront and magback print, then Slide the magfront inbetween the nameplates and use a long 10-32 screw through all three parts to secure them together. Drive a 4-40 screw through each lower hole of the nameplates and into the magfront prints. Do not fully tighten yet.



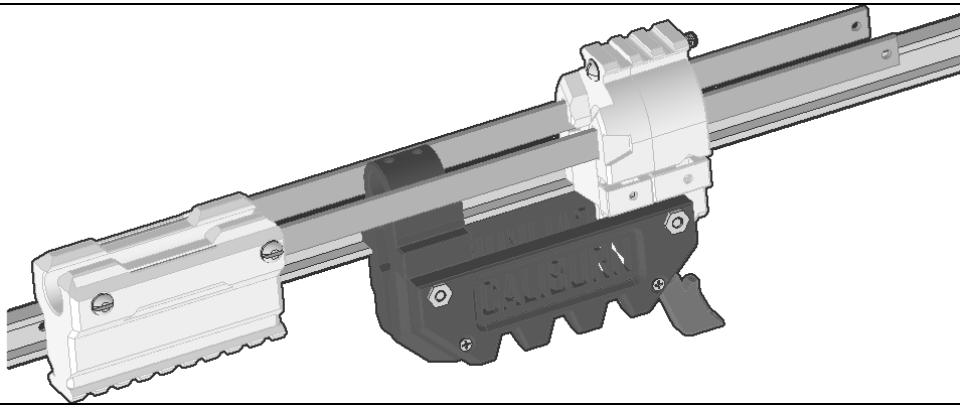
Slide a magazine into the open magwell to check fit. If the fit is too tight loosen then retighten the upper pair of long screws. Once fit of the magazine is confirmed, tighten the lower 4-40 screws the rest of the way.

Add a long 10-32 screw in through the front of the magback print, then thread a hex nut onto the end of it from behind the print. Tighten until the hex nut gets pulled into the socket in the back of that print.

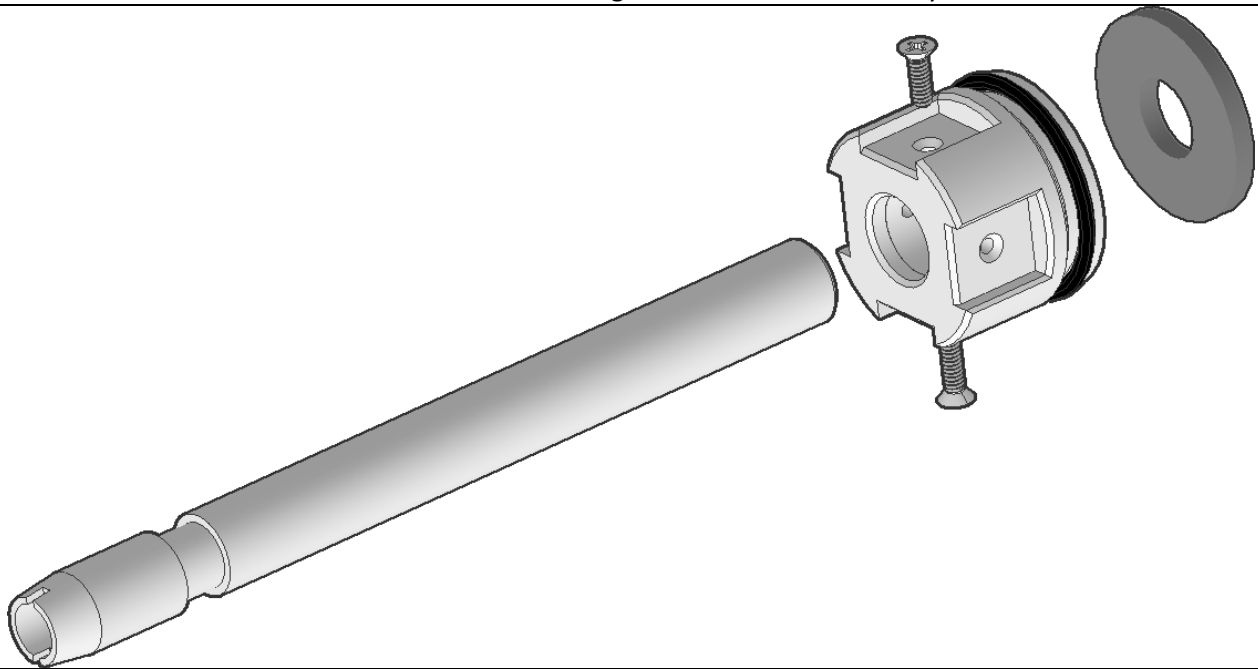


Slide a BoltArm into each slot in the DoomS print so the holes in both parts line up. Drive a 10-32 screw into each hole to

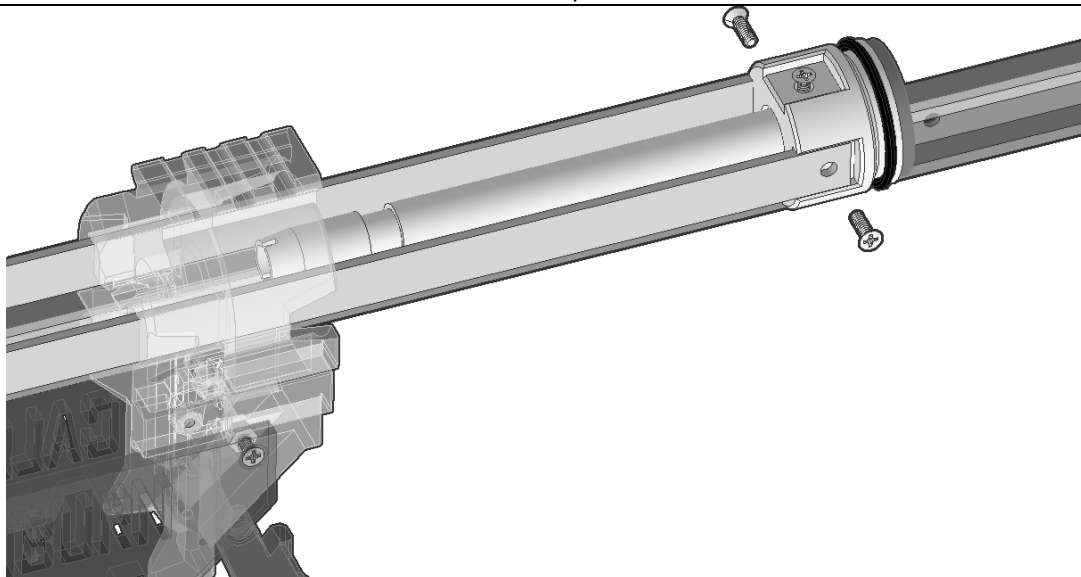
secure them.



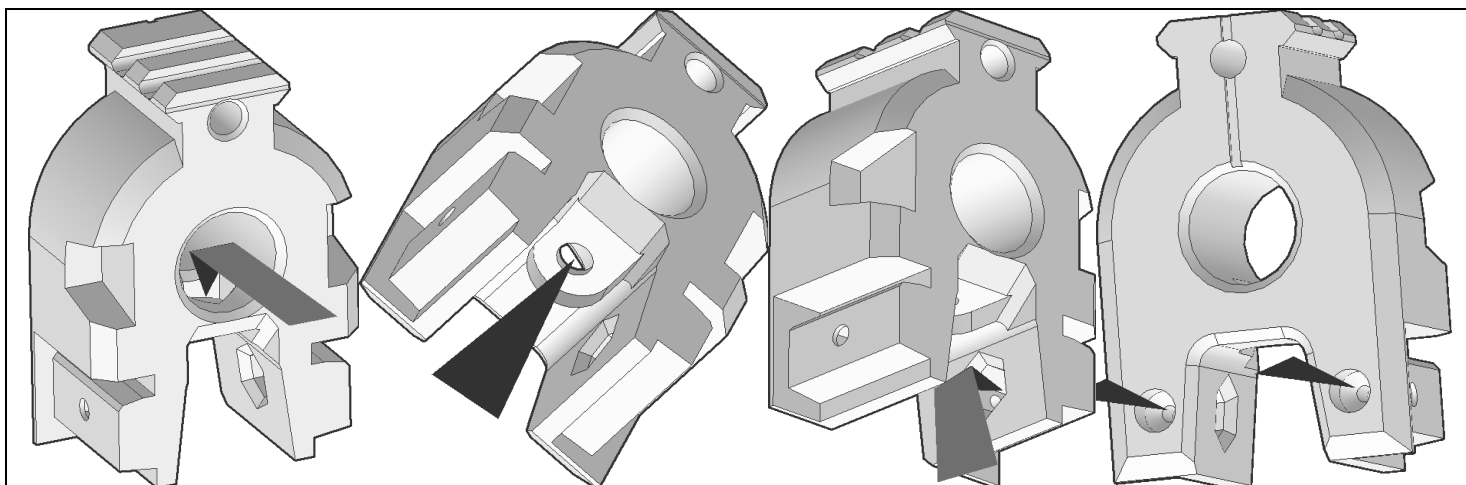
Slide the bolt arms through the slots in the assembly.



Push the Ramrod Core into the RamBase print, then secure it with a 4-40 screws from each side. **DO NOT OVERTIGHTEN.** Add an o-ring to the undercut in the RamBase print, then add the adhesive-backed Shockpad to the back face of the RamBase print.



Put the Ramrod Assembly between the bolt arms and secure it with a 4-40 screw driven into it from either side. Set this assembly aside.

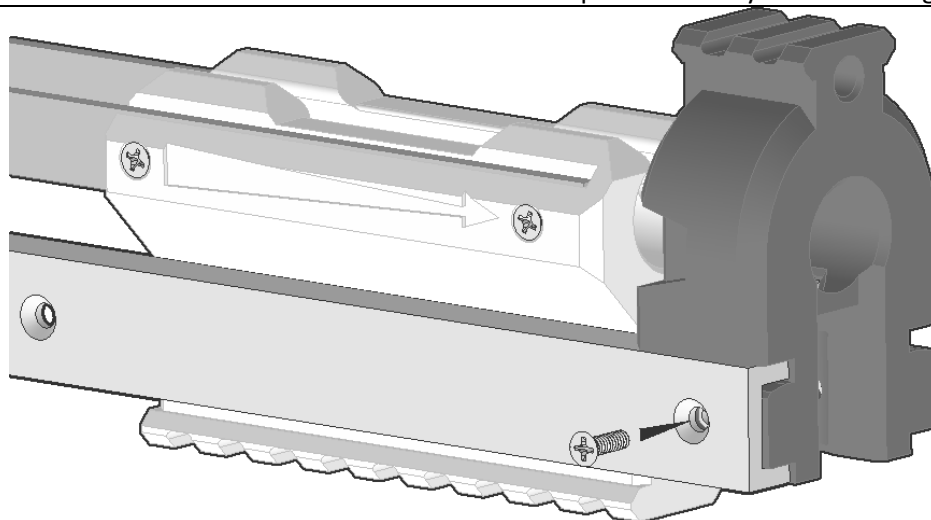


Use a screwdriver or the outside of a 3/8" socket to force a 10-32 hex nut into the hex socket inside the barrel hole in the Muzzle print.

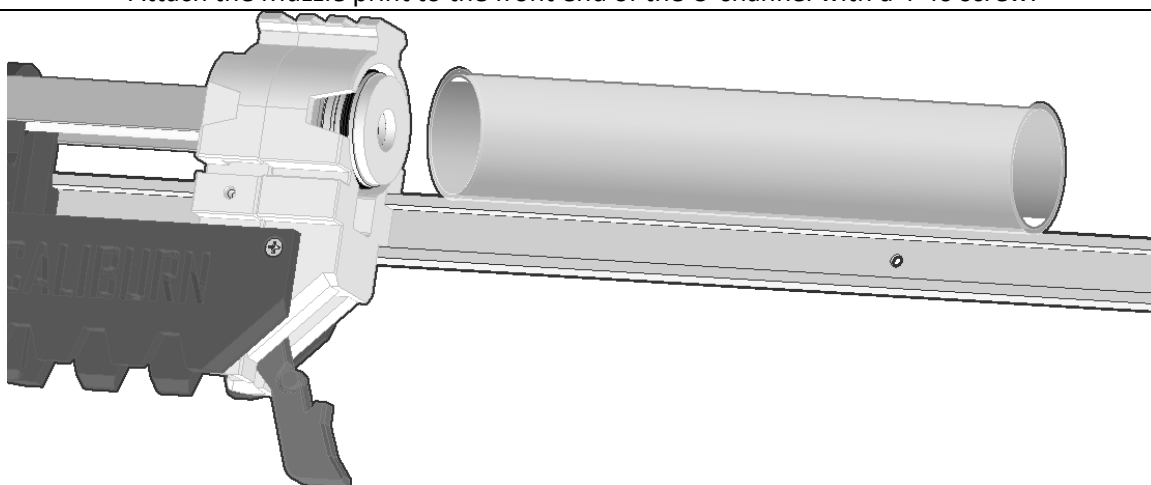
Drive a short 10-32 screw into that hex nut from underneath using a flat screwdriver. Only screw it in until the tip of the screw is flush with the opposite face of the hex nut.

Insert a 4-40 hex standoff into the sockets open from the middle of the print until it bottoms out. Repeat on the opposite side.

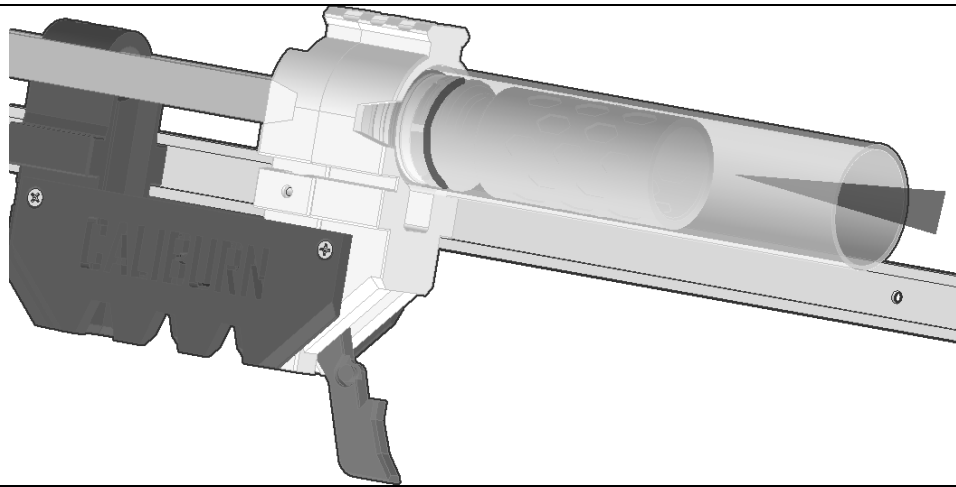
Drive a 4-40 screw into each of the holes shown at the front of the print until they bottom out against the standoffs.



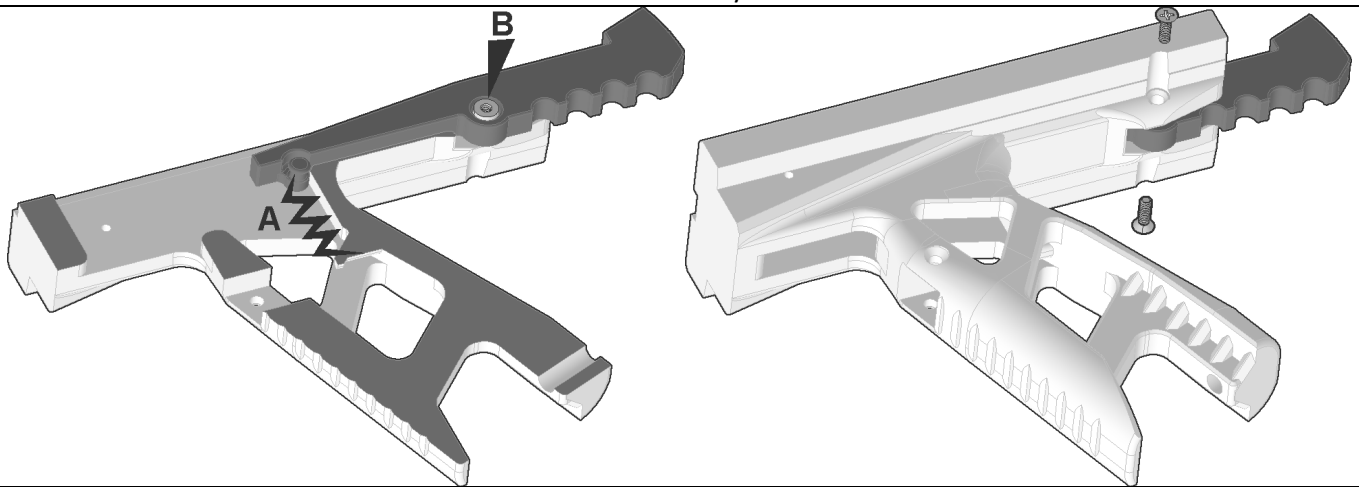
Attach the Muzzle print to the front end of the U-channel with a 4-40 screw.



Slide a Plunger Tube over the Ramrod base and into the back of the PCap print.



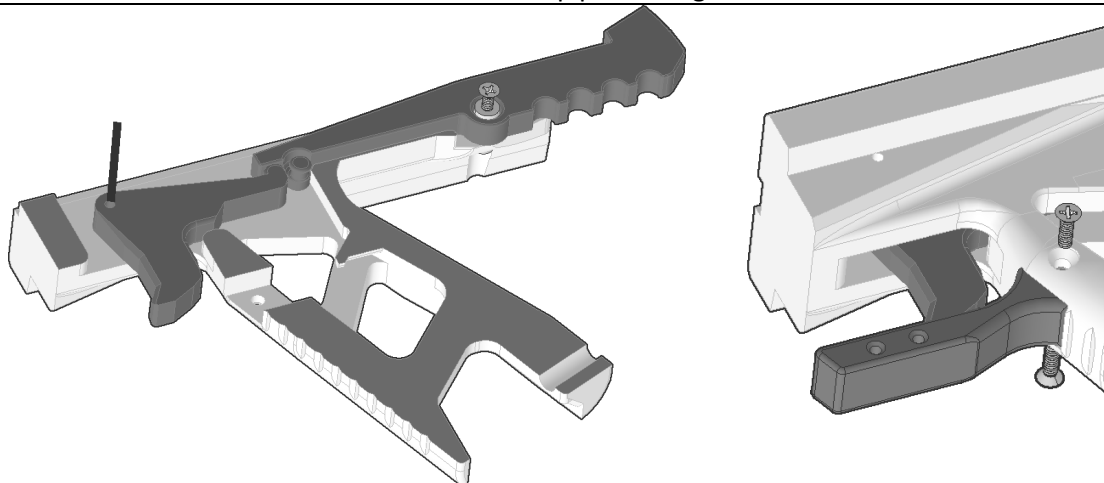
Add an O-ring to the undercut of the PlungerE print, then slide it into the Plunger Tube.
Set this assembly aside.



Add an extension spring to the peg on the Sear5 print, then use the print to fish the opposite end of the spring into and through the Grip print. Use an awl or a small flat screwdriver to pull the loop of the extension spring onto the hook inside the Grip5ar print.

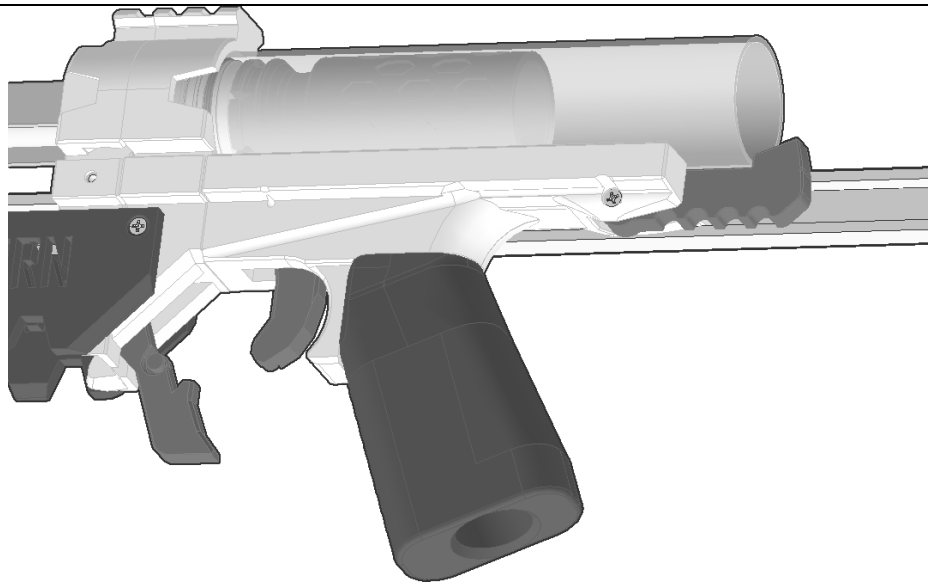
Insert a round standoff into the central hole of the Sear print, and then slide the Sear into the grip until the standoff lines up with the holes in the Grip print.

Secure the standoff to the Grip print using two 4-40 screws.

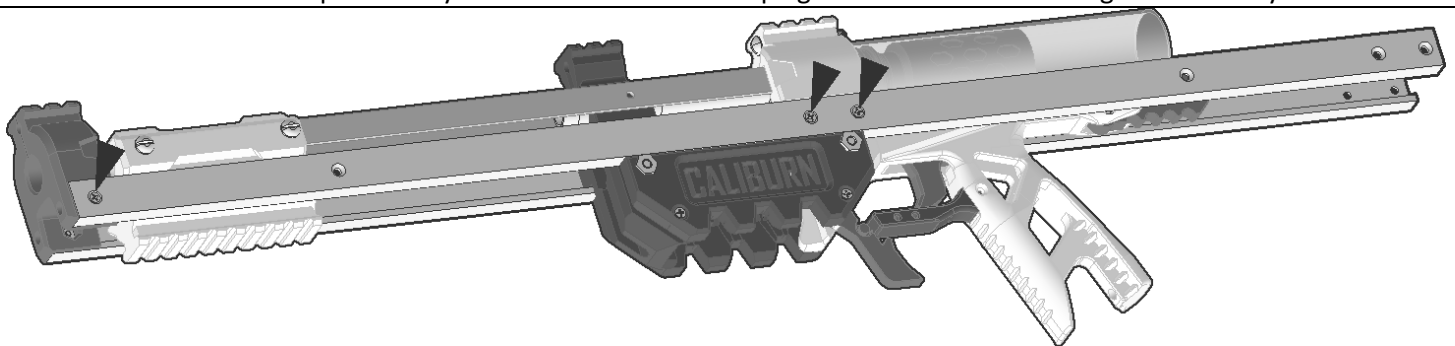


Feed the Trigger print into the slot in the lower front of the Grip print, and wedge the back end of it underneath the front edge of the Sear print. Line up the hole in the Trigger print with the hole in the Grip print and then force a short pin in through both until roughly centered.

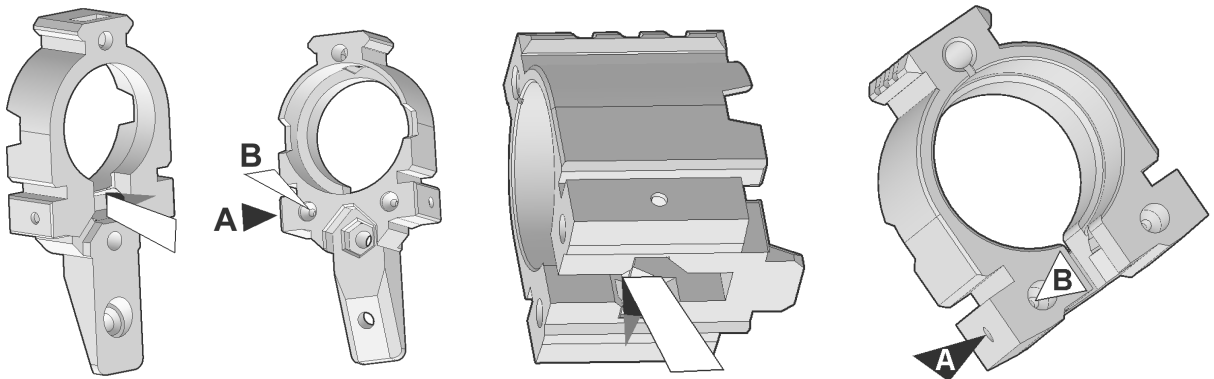
Slide the Tguard print into the square slot in the front of the Grip print, and then secure it with two 4-40 screws.



Force the Grip Assembly into the U-Channel and up against the back of the Magwell assembly.



Add the second u-channel as shown to the side of the assembly. Secure it to the magback print with 4-40 screws. Slide the muzzle print into the front end of the u-channel pair and secure it on each side with a 4-40 screw.

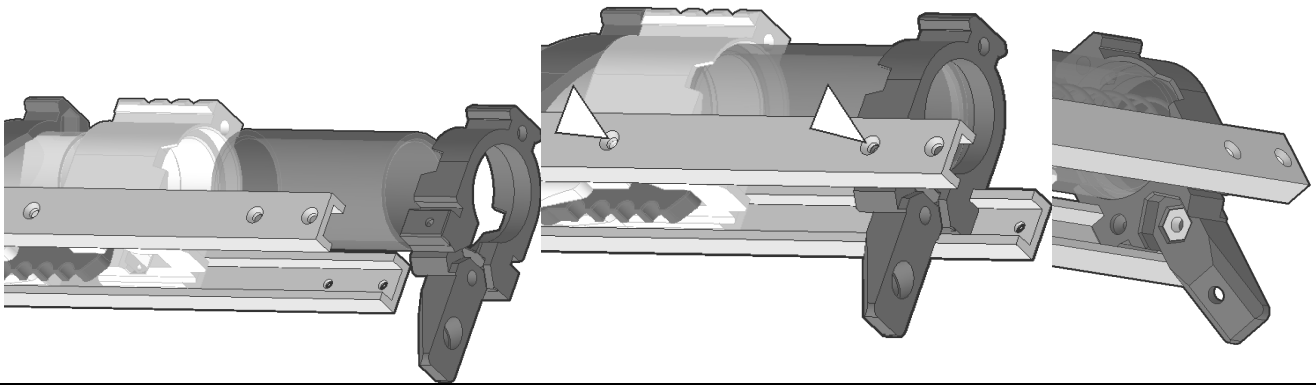


Use a slotted screwdriver to insert and then force a 4-40 hex standoff into the sockets inside the FrontButt print until it bottoms out in it. Drive a 4-40 screw into the hex standoff from the hole in the side of the print until it pulls the standoff to the bottom of the socket.

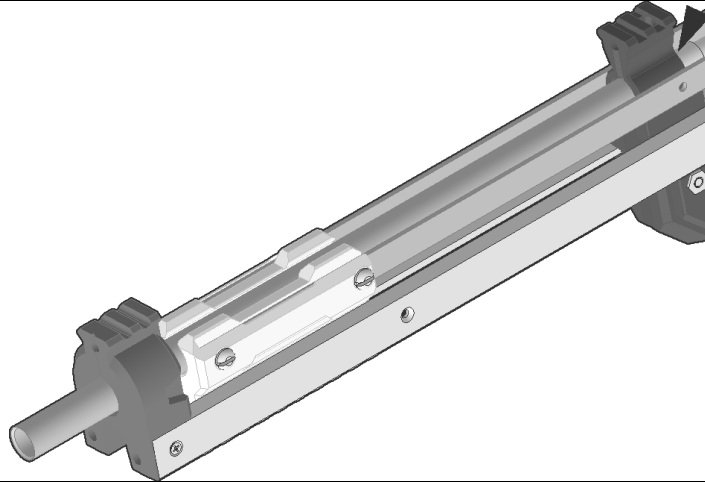
Drive a 4-40 screw into the perpendicular hole at the front of the print until the standoff is held captive.

Then remove the 4-40 screw you drove into the standoff from the side of the print.

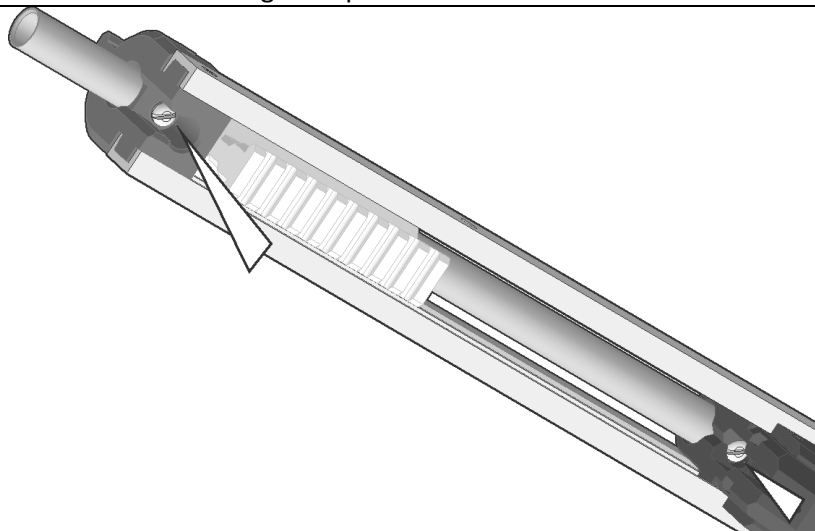
Repeat on the opposite side. And then repeat the same process for the Coupler print.



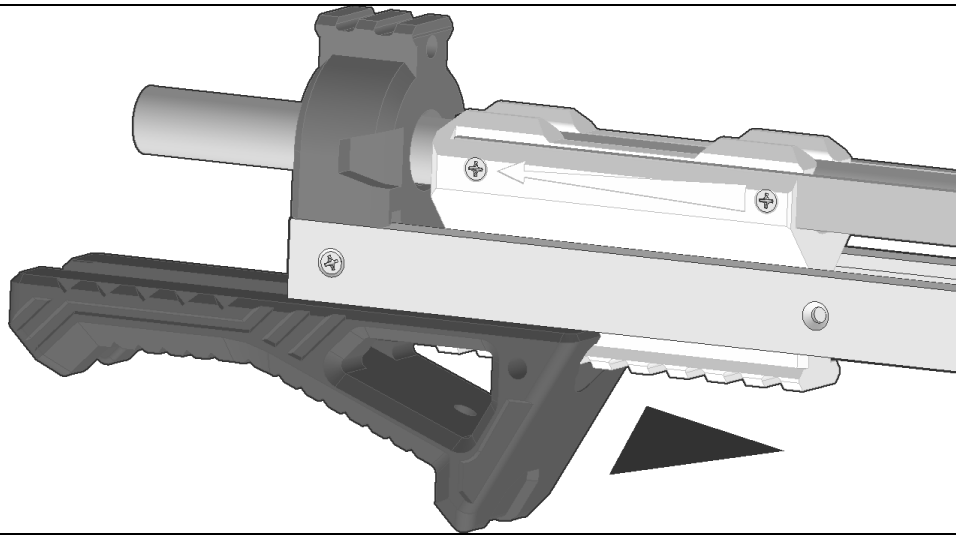
Slide the Coupler, Stock Spacer, and Frontbutt prints into the U-channel pair. Then secure with 4-40 screws on each side. Force a 10-32 Hex Nut into the socket in the front of the FrontButt print.



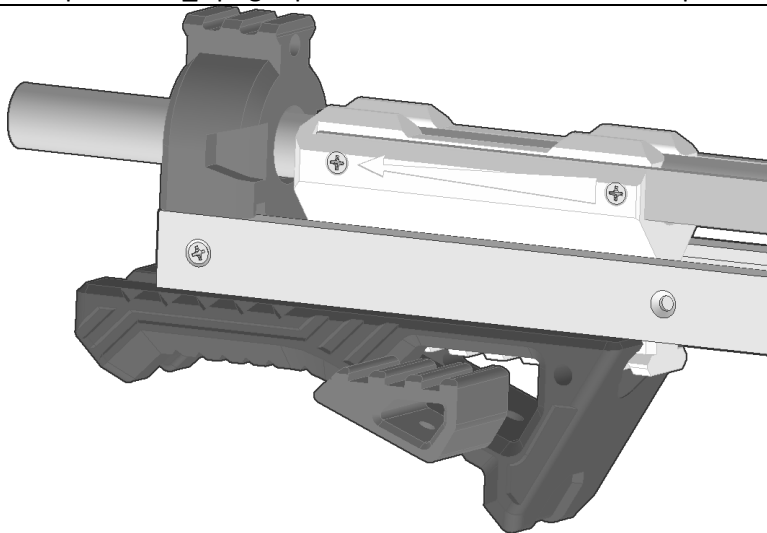
Slide the barrel in through the Muzzle print, DoomS print, and MagFront print until it is flush with the back side of the MagFront print where indicated.



Tighten both screws indicated to clamp the barrel in place.

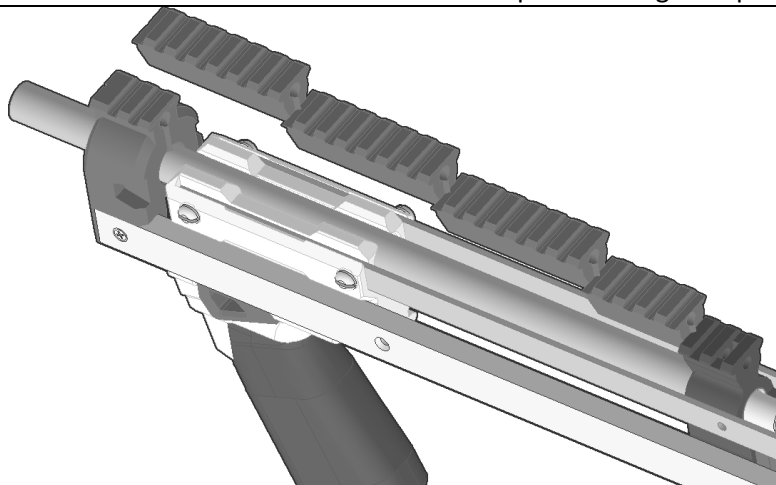


Tap the AFG_Upright print onto the rail of the DoomS print.

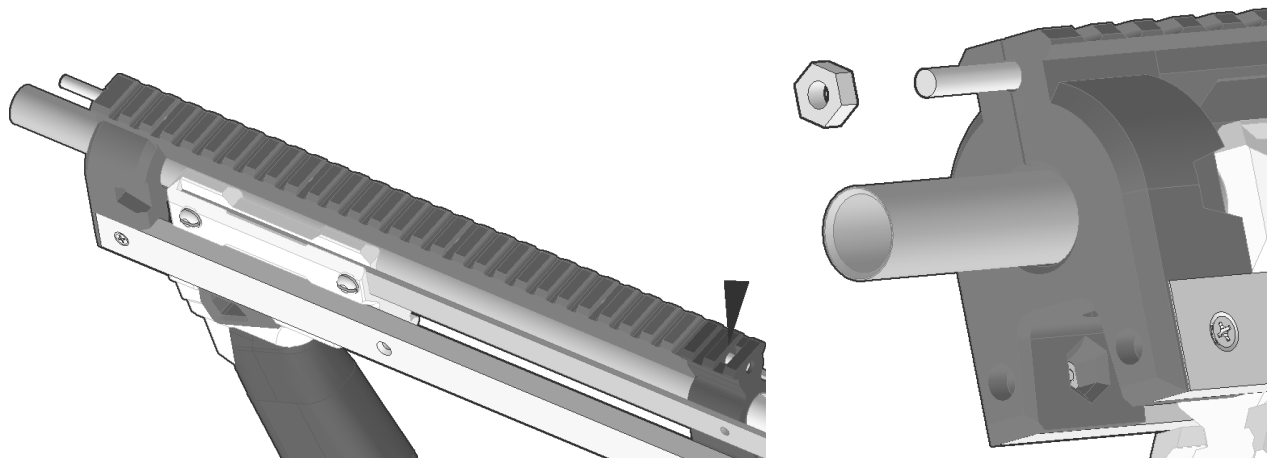


Force the AFGCore into the window of the AFG_Upright print once the placement lines up with the teeth of the AFGCore print. Force it into place with a hammer until roughly centered.

Insert a 10-32 Hex Nut into the slot in the top of the Magfront print.



Loosen the screws that hold the muzzle print onto the ends of the u-channel pair.
 Insert the 3 Rail prints and a RailD print into the gap between the Muzzle and Magfront prints.
 Orient each so that the positive key in the end of each print faces towards the rear of the blaster.

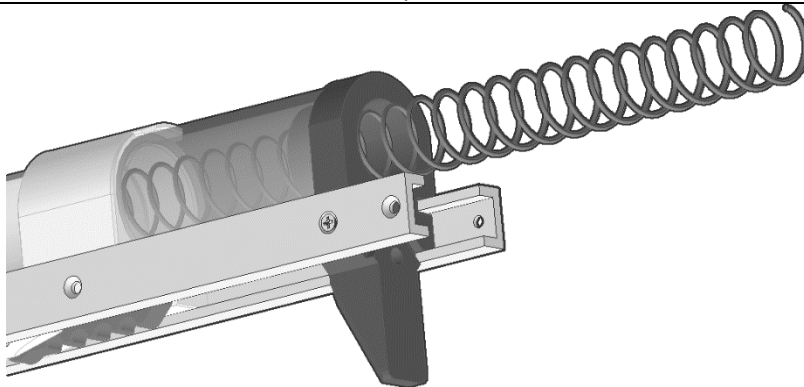


Add a hex nut into the slot in the top of the Magfront print.

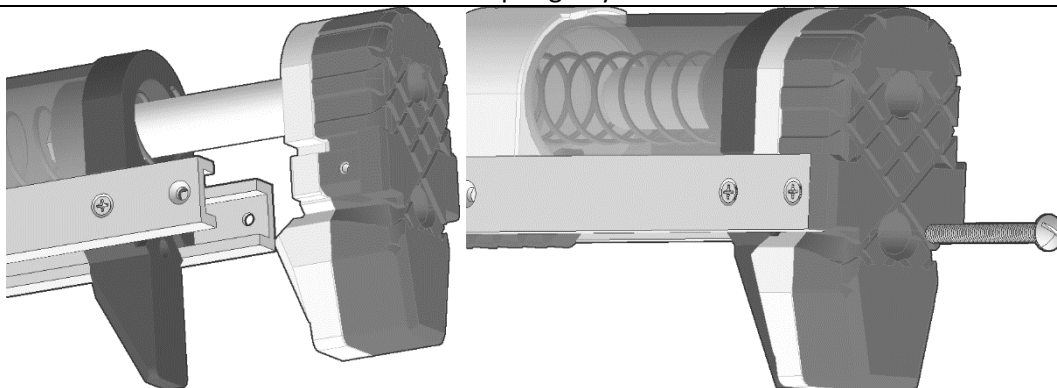
Slide a 13-inch length threaded rod in through all of the segments and screw it into the Hex Nut inside the slot of the Magfront print.

Add a hex nut to the exposed end of the threaded rod and tighten until it pulls all of the rail segments and muzzle print together.

Tighten the screws that hold the muzzle print onto the ends of the u-channel pair.

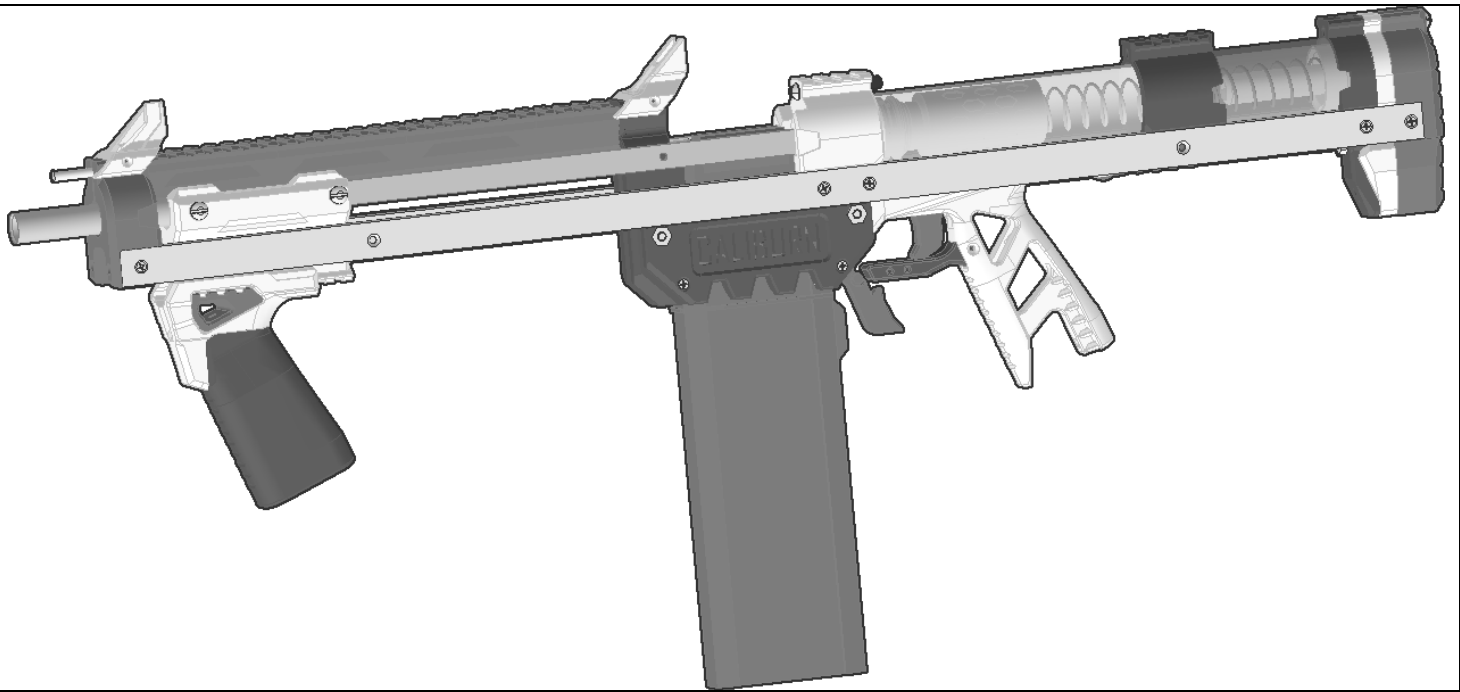


Install a main spring of your choice.



Slide the Butt Assembly into the end of the stock

Feed a 1-3/4" length screw in through the assembly and screw it into the hex nut in the FrontButt print.



Insert a magazine into the magwell. If the fit is too tight you may need to loosen the screw that clamps the barrel into the muzzle, then the two that attach the front of the NamePlate prints to the MagFront print. Then retighten once the magazine fit feels correct.

Slide the foregrip back to compress the mainspring until the plunger gets engaged on the Sear. With the breech OPEN install a Magazine loaded with darts. Slide the foregrip all the way forwards to chamber the dart in the top of the Magazine. You can load up to four darts into the barrel at a time if desired by cycling the Foregrip back and forth multiple times prior to pulling the Trigger. **ONLY PULL THE TRIGGER WHEN THE BREECH IS CLOSED AND THE FOREGRIP IS IN THE FORWARD POSITION.** If you do not have a dart loaded in the barrel and need to pull the Trigger to de-prime the blaster, plug the end of the barrel with your finger before doing so.

Replacing the Main Spring does not require full disassembly of the Blaster. You just need to reverse the last 2 steps in these instructions in order to take the buttplate off.

The Blaster and Hardware Kits are shipped with K25 springs. The K25 is rated slightly lower than the K26, which is also available. The alternate spring options are the K31 and 788 which both have to be purchased separately or opted for as a replacement. Either are recommended for indoor use, or for younger players.